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Jun Cao, Chenhong Wang, Leijia Guo, Zhiyong Xiao, Keliang Liu, Husheng Yan

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Co-administration of a charge-conversional dendrimer enhances antitumor efficacy of conventional chemotherapy

Jun Cao[a], Chenhong Wang[b], Leijia Guo[a], Zhiyong Xiao[b], Keliang Liu[b], Husheng Yan[a,c,*]

[a] *Key Laboratory of Functional Polymer Materials (Ministry of Education), College of Chemistry, Nankai University, Tianjin 300071, China*

[b] *Beijing Institute of Pharmacology and Toxicology, Beijing 100850, China*

[c] *Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Tianjin 300071, China*

* Corresponding author. E-mail: yanhs@nankai.edu.cn

Abstract: Despite extensive investigations, the clinical translation of nanocarrier-based drug delivery systems (NDDS) for cancer therapy is hindered by inefficient delivery and poor tumor penetration. Conventional chemotherapy by administration of free small molecule anticancer drugs remains the standard of care for many cancers. Herein, other than for carrying and releasing drugs, small nanoparticles were used as a potentiator of conventional chemotherapy by co-administration with free chemotherapeutic agents. This strategy avoided the problems associated with drug loading and controlled release encountered in NDDS, and was also much simpler than NDDS. Negatively charged poly(amido amine)-2,3-dimethylmaleic monoamide (PAMAM-DMA) dendrimers were prepared, which possessed low toxicity and can be converted to positively charged PAMAM dendrimers responsive to tumor acidic pH. The *in situ* formed PAMAM in tumor